

## **Establishment of a National Agricultural Information Network (Cyber Agriculture Extension Mechanism)**

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### **Introduction**

Agricultural extension service is the backbone of the agricultural development of a country. Earlier, *Krushikarma Viyapthi Sevaka Niladari* (KVSN: Agriculture Extension Service Officer) were the grass root level extension officers providing face to face extension services, which facilitated the smooth transfer of technologies and information to the farming community.

Drastic changes, such as trade liberalization, withdrawal of agricultural extension workers from extension activities, provincialization and decentralization of powers to provincial councils, there has been a significant erosion in the public agricultural extension system in the country. This has paved the way to severe setbacks in regular information flow from knowledge repositories (Research Station) to farmers and back to researchers/ agriculturists. The weak linkages among extension, research, marketing network and farmers limit the effectiveness of research and extension to contribute agricultural development. Therefore as an ICT initiative; 'Cyber extension' mechanism has been implemented in Sri Lanka in the year 2004 as an appropriate information exchange mechanism affordable to rural farmers to satisfy their information needs. The project established 51 Cyber Extension Units (CEU) at Agriculture Instructors' offices, *Govijana Kendra* (Agrarian Service Centres) and District Agriculture Training Centres (DATCs) during the period of 2004-2007. Each Cyber units were equipped with a technically high end multimedia computer, scanner, laser printer, digital camera, uninterruptible power supply unit (UPS) and required furniture.

### **Cyber Extension**

Cyber extension is an agricultural information exchange mechanism over cyber space, the imaginary space behind the interconnected computer networks through telecommunication means. It utilizes the power of networks, computer communications and interactive multimedia to facilitate information sharing mechanism.

## **Methodology**

Considering the limitations in the original online cyber extension mechanism, which depends on telecommunications facility, the project was implemented in two phases.

**Phase I**           An alternative approach: Digital / Wireless extension strategies

**Phase II**         Real cyber extension with internet and telecommunication facility

### **Phase I**

An Alternative Approach to Cyber Extension: Digital/ Wireless Extension Strategies

In this phase, Cyber Extension Units (Rural Agriculture Knowledge Centres) were established at selected Agriculture Instructors' (AIs) offices at Agrarian Service Centres. Initially, CARP funded for fifteen Cyber units and later increased up to twenty three. Rice Granary Area Programme (GAP) with International Rice Research Institute (IRRI), Philippines funded for another twenty two and the total has now increased to 45 units, scattered all most all districts.

Each cyber extension unit comprises a high-end multimedia computers, digital camera, laser printer, Scanner and uninterruptible power supply (UPS) unit. The Cyber Unit is managed by the Agriculture Instructor (AI) and continuous computer training programs have been conducted at the AVC to improve computer skills of the AI. In this phase, multimedia e-learning strategies were implemented with the use of interactive Multimedia CD- ROMs (IMM CD-ROMs).

### **Interactive Multimedia CD-ROMs**

A stand alone computer application distributed with CD-ROMs, with a range of media elements such as graphics, photos, text, illustrations, animations, sounds and video, presented in a user interface where users have some control to select, what information is presented and when.

### **Digital Extension Strategy 1**

Use of IMM CDRoms as Information Database in Various Agriculture Crops

e-learning strategies have been introduced to cyber units by using IMM CDRoms on agriculture subjects. Objective of using IMM CDs as ICT strategy was to provide farmers with relevant agricultural content in an aesthetically pleasing and entertaining environment.

Extension workers can use IMM CDROMs on agriculture, as a teaching tool (audio visual aid). Farmers also can use the CDROMs as a self-learning package. Farmers trained on use of information technologies in agriculture, will become 'e-farmer'. The extension workers will become 'e-extensionist'. The AVC of the DOA has already completed thirty three IMM CDs are distributed to Cyber extension units.

Each CDROM was developed with the assistance of a senior Research Officer of the subject, a Research Assistant and team of multimedia designers of the Audio Visual Centre of the DOA.

In addition to technical information on each crop, organized under several chapters a separate chapter was devoted for compiling database on research papers and articles published by local authors in local and foreign journals. Each CD has a separate link for video films pertaining to each crop, which were produced and telecast through *Mihikatha Dinuwo* (weekly television program of the DOA) by the Audio Visual centre.

## **Digital Extension Strategy 2**

Use of Interactive Multimedia to develop low cost Audio Visual Aids

Extension and training are inevitable in transferring technical know-how to farmers and most of these trainings are not supported with better quality audio visual media. Therefore, a CDROM to develop presentation skills (especially flipchart skills) of Agriculture Instructors was developed and given to all Cyber units. As a consequence, extension workers were able to produce low cost audio visual aids at their door step with locally available material (Hi-tech to improve low cost instructional media).

## **Interface and Navigational Design of CD-ROMs**

CD-ROMs were produced for extension workers as well as farmers, where few of the potential users were expected to have had much previous exposure to such technologies. Considering the low computer literacy of extension workers as well as farmers, a familiar concept for the interface was used; an electronic book. Similar to reading an analogue book. Page turn is facilitated by two icons; 'Next' (to go next page) and 'Previous' (to go previous page). The contents were organized into chapters, topics and sub-topics. Most of the pages contain variety of multimedia presentations (video, sound /voice-overs, animations, graphics and text). All media are interactive and users may review and/or skip section, as they desire. Each page is printable and farmers will be able to get a print.

### **Digital Extension Strategy 3**

New dimension for Web Based (Internet) Delivery Mechanism with CD ROMs

The DOA has setup the web of [www.agridept.gov.lk](http://www.agridept.gov.lk) to serve farmers as well as the general public. The website, presents most of the agriculture related information as well as agricultural statistics, news, recently published books etc. The Cyber extension project has established a mechanism to distribute DOA web to Cyber units.

### **Digital Extension Strategy 4**

Develop Digital Training Material (Audio Visual Aids) for Extension and Training

The most of the farmers problems, reported in the recent past were location specific. In certain circumstances IMM CDs produced by the National Centre would not give answers for their location specific problems. Therefore, extensionist attached to Govijana kendraya, were able to produce their own 'Power Point' presentations and desktop publications by using the facility of Cyber extension unit for their extension training at local level. They were also asked to compile a visual database of local problems in each season and there by researchers would be able to investigate the history of local problems.

### **Phase II - Using online Resources**

After considering the development in telecommunication facility and rapidly grown dynamic e-government situation in Sri Lanka, a maximum utilization of original on-line Cyber extension was implemented in November 2006. CDMA (Code Division Multiple Access) telephone and internet facility were provided to the Cyber units of the project.

### **Strategy 1**

Browsing agriculture based website as information source

World Wide Web is a main source of information in the case any sector. Therefore, Cyber unit users can access to wide variety of information related to agriculture by browsing local and international websites. Viz DOA website, International Rice Research Institute and Sri Lanka Rice Knowledge Bank etc.

## **Strategy 2**

### E-mail with visual attachments

Technical assistance is sought through email queries with visual attachments. For instance if there is any new problem such as emergence of a new pest or diseases can be visualized either by digital camera or by scanning the live specimen with the scanner and send to the subject matter specialist(SMS). This really helps to overcome the geographical barrier of individual visiting of the SMS.

## **Strategy 3**

### Farmer database

The sustainability of agriculture sector can be improved by better information on knowledge of supply, demand, knowledge of buyer requirements and the prices. Pre-seasonal planning will help the country to avoid over production and ultimate low prices. Considering the importance of these information, a farmer database (name of the farmer, type of crop, extent, expected yield etc.) was introduced to the network of information repository of the DOA web site in early 2007. This initiative will be an attempt to solve marketing problems of the farmer as direct link will be established between the farmer and the whole sale buyer, both local and foreign, without middlemen. The regular updating database will also give policy makers a clear insight of availability of crop at a given time, which helps them for export/import decision making.

## **Strategy 4**

### Price information

Daily price information of the Dedicated Economic Zone (Vegetable whole sale market) at Dambulla is collected and displayed in DOA website.

## **Strategy 5**

### Tool Free Agriculture Advisory Service

Providing solution to the farm problems with a dedicated hotline number (1920) is very popular among farming community and general public in Sri Lanka since it is supported with

panel of expertise. Another important feature is that, the hotline number is able access by any telecommunication networks operated in Sri Lanka by free of charge.

### **Strategy 6**

Cyber Agriculture Wikipedia (yet to be started)

This an web based agriculture information repository and will be the single online meeting place for farmers and agriculture expertise to discuss and share agriculture information and experience with the use of blogs and vlogs.